

**INITIAL EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
OFFICE OF THE STATE FIRE MARSHAL

REGARDING PROPOSED CHANGES TO
CALIFORNIA FIRE CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 9
2018 TRIENNIAL RULEMAKING CYCLE**

(The State agency shall draft the regulations in plain, straightforward language, avoiding technical terms as much as possible and using a coherent and easily readable style. The agency shall draft the regulation in plain English. A notation shall follow the express terms of each regulation listing the specific statutes authorizing the adoption and listing specific statutes being implemented, interpreted, or made specific. (PART 1 – ADMINISTRATIVE CODE))

LEGEND FOR EXPRESS TERMS

1. Existing California amendments or code language being modified are in italics when they appear in the model code text: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears underlined and in italics.
3. Repealed text: All such language appears in ~~strikeout~~.

INITIAL EXPRESS TERMS

Item 1 Gaseous H2 Fueling

Table of Contents

[Add new section in the Table of Contents of Chapter 58 as follows:]

CHAPTER 58 FLAMMABLE GASES AND FLAMMABLE CRYOGENIC FLUIDS 531

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105.6.17.1

[Add new required operational permits sub-section 105.6.17.1 Mobile fueling of hydrogen-fueled vehicles:]

105.6.17.1 Mobile fueling of hydrogen-fueled vehicles. An operational permit is required:

1. To engage in the mobile dispensing of gaseous hydrogen as a fuel into the fuel tanks of motor vehicles.

2. Where required by the fire code official, to utilize a site for the dispensing of gaseous hydrogen as a fuel from tank vehicles into the fuel tanks of motor vehicles.

Exception: In cases of an emergency, a site permit is not required.

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Section 202

[Add new definition to Section 202 General Definitions as follows:]

HYDROGEN-FUELED VEHICLES. *Hydrogen-fueled vehicles are motor vehicles having compressed hydrogen fuel storage tanks on-board and using hydrogen fuel directly or indirectly for the motor vehicle propulsion. Hydrogen-fueled vehicles include fuel cell electric vehicles, battery electric vehicles with fuel cell range extender and internal combustion engine vehicles.*

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[Modify the definition of Mobile Fueling in Section 202 General Definitions as follows:]

MOBILE FUELING. The operation of dispensing liquid and gaseous fuels from tank vehicles into the fuel tanks of motor vehicles. Mobile fueling may also be known by the terms "Mobile fleet fueling," and for conventional liquid fuels as "Wet fueling" and "Wet hosing."

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ROADSIDE HYDROGEN SERVICE VEHICLES. *Approved vehicles used for dispensing of compressed gaseous hydrogen at partial pressure into the fuel tanks of hydrogen-fueled vehicles from on-board hydrogen supply tanks.*

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5801.1

[Add new text to Section 58 as follows:]

5801.1 Scope. The storage and use of flammable gases and flammable cryogenic fluids shall be in accordance with this chapter, NFPA 2 and NFPA 55. Compressed gases shall also comply with Chapter 53 and cryogenic fluids shall also comply with Chapter 55. Flammable cryogenic fluids shall comply with Section 5806. Hydrogen motor fuel-dispensing stations and repair garages and their associated above-ground hydrogen storage systems shall also be designed, constructed and maintained in accordance with Chapter 23 and NFPA 2. Mobile fueling of hydrogen-fueled vehicles shall comply with Section 5809.

Exceptions:

1. Gases used as refrigerants in refrigeration systems (see Section 605).
2. Liquefied petroleum gases and natural gases regulated by Chapter 61.
3. Fuel-gas systems and appliances regulated under the ~~International Fuel Gas Code~~ California Mechanical and the California Plumbing Code other than gaseous hydrogen systems and appliances.
4. Pyrophoric gases in accordance with Chapter 64.

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5809- New Section

[Add new Section 5809 as follows:]

SECTION 5809
MOBILE GASEOUS FUELING OF HYDROGEN FUELED VEHICLES

5809.1 General. *Mobile fueling of gaseous hydrogen into the fuel tanks of hydrogen-fueled vehicles shall comply with Sections 5809.1 through 5809.6. Mobile fueling of liquid hydrogen is prohibited.*

5809.1.1 Approval required. *Mobile hydrogen fueling operations shall not be conducted without first obtaining a permit and approval from the fire code official. Mobile hydrogen fueling operations shall occur only at approved locations within the jurisdiction.*

5809.2 Roadside service vehicles. *Roadside hydrogen service vehicles shall comply with the following:*

- 1. Roadside hydrogen service vehicles and hydrogen supply tanks shall comply with U.S. DOT requirements for the transportation of hydrogen gas.*
- 2. Individual hydrogen fuel supply tanks installed on roadside hydrogen service vehicles shall have a maximum individual fuel capacity of 1,270 cubic feet (3 kg) of hydrogen.*
- 3. The maximum aggregate amount of all hydrogen fuel in the supply tanks of roadside hydrogen service vehicles shall not exceed 4,233 cubic feet (10 kg) of hydrogen.*
- 4. The roadside hydrogen service vehicle shall comply with all local, state and federal requirements.*
- 5. The vehicle and its equipment shall be maintained in good repair.*

5809.3 Required Documents. *Documents developed to comply with Sections 5809.3.1 through 5809.3.4 shall be submitted to the fire code official prior to approval of the permit application to conduct mobile gaseous hydrogen fueling operations. The required documents shall be maintained and updated when necessary by the permittee. Any modifications to an approved plan shall be submitted as needed and made available to the fire code official for review and approval.*

5809.3.1. Safety and emergency response plan. *The owner of a mobile hydrogen fueling operation shall develop a written safety and emergency response plan that:*

- 1. Establishes policies and procedures for fire safety, hydrogen leak prevention and control, personnel training and compliance with other applicable requirements of this code; and*
- 2. Demonstrates readiness to respond to a hydrogen leak and carry out appropriate mitigation measures.*

5809.3.2. Standard operating procedures. *The owner of a mobile hydrogen fueling operation shall develop a written fueling standard operating procedure (SOP) that:*

- 1. Clearly and unambiguously describes the sequence of steps that a roadside gaseous hydrogen service vehicle operator needs to take to ensure safety of gaseous hydrogen fueling and compliance with the fueling protocol requirements;*
- 2. Establishes a fueling protocol that is consistent with applicable requirements of a recognized national standard such as SAE J2601. Compliance with these requirements shall be demonstrated by a valid test record from an independent third party such as a recognized hydrogen-fueled vehicle OEM (Original Equipment Manufacturer).*

5809.3.3 Training records. *Persons performing dispensing operations shall be qualified to deliver and dispense gaseous hydrogen fuels and shall be trained in these standards that are being created, the*

equipment manufacturer's training and the appropriate mitigating actions in the event of a fire or a hydrogen leak prior to beginning the dispensing operations. Re-training shall be performed periodically, but no less frequent than annually. Training records shall be maintained by the dispensing company and made available to the fire code official upon request.

5809.3.4 Site plan. Where required by the fire code official for other than emergency roadside service, a site plan shall be developed for each location at which mobile gaseous hydrogen fueling occurs. The site plan shall be in sufficient detail to indicate: all buildings, structures, lot lines, property lines and appurtenances on site and their use and function, and the scale of the site plan.

5809.4 Mobile hydrogen fueling areas. Areas where mobile hydrogen fueling is allowed shall comply with Sections 5809.4.1 through 5809.4.3.

5809.4.1 Prohibited locations. Mobile hydrogen fueling shall not occur on public streets, public ways or inside buildings. Fueling on the roof level of parking structures or other buildings is prohibited.

Exception: Fueling hydrogen-fueled vehicles on a public street during a roadside emergency.

5809.4.2 Separation. The point of connection between the roadside hydrogen service vehicle and the hydrogen-fuel vehicle shall not be less than 15 feet (4572 mm) from buildings, property lines or combustible storage.

5809.4.3 Sources of ignition. Smoking, open flames, and other sources of ignition, including un-rated electrical equipment, shall be prohibited within 25 feet (7620 mm) of fuel dispensing activities. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the vehicle or the point of fueling shall be prominently posted on the mobile fueling vehicle. The engines of vehicles being fueled shall be shut off during fueling.

5809.5 Equipment. Mobile hydrogen fueling equipment shall comply with Sections 5809.5.1 through 5809.5.4.

5809.5.1. Listed equipment. Roadside hydrogen service vehicle fuel dispensing equipment and appurtenances shall be listed or approved by a recognized third party for its intended use.

5809.5.2 Dispensing hose. The dispensing hose shall be equipped with a breakaway coupling installed within 3 feet (1 m) from the dispensing nozzle.

5809.5.3. Hose reel. The dispensing hose shall be properly placed on an approved reel or in an approved compartment before moving the roadside hydrogen service vehicle.

5809.5.4 Pressure limit. Only dispensing of compressed gaseous hydrogen at partial pressure into the fuel tanks of hydrogen-fueled vehicles from on-board hydrogen supply tanks is allowed.

5809.6 Operations. Mobile hydrogen fueling operations shall comply with Sections 5809.6.1 through 5809.6.6.

5809.6.1 Attendance. Roadside hydrogen service vehicles shall be constantly attended during fueling operations.

5809.6.2. Bonding cable. A bonding cable shall be securely connected between the mobile fueling vehicle and the fueled vehicle prior to the start of the dispensing operation.

5809.6.3 Positioning of fueling vehicle. Roadside hydrogen service vehicles shall be positioned with respect to vehicles being fueled to prevent traffic from driving over the delivery hose and between the transport vehicle and motor vehicle being fueled.

5809.6.4 Brakes. During fueling operations, mobile fueling vehicles brakes shall be set, chock blocks shall be in place and warning lights shall be in operation.

5809.6.5 Fire extinguisher. *A portable fire extinguisher with a minimum rating of 40: BC shall be provided on the mobile, roadside service hydrogen fueling vehicle with signage clearly indicating its location.*

5809.6.6 Emergency communication device. *Operators of mobile, roadside service hydrogen fueling vehicles shall have in their possession at all times an emergency communication device to notify the proper authorities in the event of an emergency during fueling.*

Notation

Authority: Health and Safety Code Sections 1250, 1569.72, 1569.78, 1568.02, 1502, 1597.44, 1597.45, 1597.46, 1597.54, 1597.65, 13108, 13108.5, 13114, 13143, 13143.2, 13143.6, 13146, 13210, 13211, 17921, 18949.2, 25500 through 25545, Government Code Section 51189, Public Education Code 17074.50

Reference(s): Health and Safety Code Sections 13143, 13211, 18949.2, 25500 through 25545, Government Code Sections 51176, 51177, 51178 and 51179, Public Resources Code Sections 4201 through 4204.

Item 2. Carbon Monoxide

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915.1 General. Carbon monoxide detection shall be installed in new buildings in accordance with Sections 915.1.1 through 915.7. Carbon monoxide detection shall be installed in existing buildings in accordance with *this section and* Chapter 11 of the ~~International~~ California Fire Code.

Pursuant to Health and Safety Code Section 17926, carbon monoxide detection shall be installed in all existing Group R buildings as required in this section.

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915.2.3 Group E occupancies. Carbon monoxide detectors shall be installed in classrooms in Group E occupancies *where classrooms include any of the conditions identified in Sections 915.1.2 through 915.1.6.* Carbon monoxide alarm signals shall be automatically transmitted to an on-site location that is staffed by school personnel.

Exception: Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 30 or less.

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915.4.2 Listings. Residential Carbon monoxide alarms shall be listed in accordance with UL 2034.

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1103.9 Carbon monoxide alarms. Carbon monoxide alarms shall be installed in existing dwelling units and sleeping units where those units include any of the conditions identified in Sections 915.1.2 through 915.1.6. The carbon monoxide alarms shall be installed in the locations specified in Section 915.2 and the installation shall be in accordance with Section 915.4.

Exceptions:

1. Carbon monoxide alarms are permitted to be solely battery operated where the code that was in effect at the time of construction did not require carbon monoxide detection to be provided.
2. Carbon monoxide alarms are permitted to be solely battery operated in dwelling units that are not served from a commercial power source.
3. A carbon monoxide detection system in accordance with Section 915.5 shall be an acceptable alternative to carbon monoxide alarms.

1103.9.1 Carbon monoxide detection in existing Group E buildings. *For the purposes of carbon monoxide detection, an existing Group E is a building constructed before January 1, 2017. When and existing Group E occupancies has a fossil, fuel burning furnace located inside the building the school is encouraged to install carbon monoxide detection in accordance with the California Existing Building Code.*

No person shall install, market, distribute, offer for sale, or sell any carbon monoxide device in the State of California unless the device and instructions have been approved and listed by the Office of the State Fire Marshal.

Notation

Authority: Health and Safety Code Sections 1250, 1569.72, 1569.78, 1568.02, 1502, 1597.44, 1597.45, 1597.46, 1597.54, 1597.65, 13108, 13108.5, 13114, 13143, 13143.2, 13143.6, 13146, 13210, 13211, 17921, 18949.2, 25500 through 25545, Government Code Section 51189, Public Education Code 17074.50
Reference(s): Health and Safety Code Sections 13143, 13211, 18949.2, 25500 through 25545, Government Code Sections 51176, 51177, 51178 and 51179, Public Resources Code Sections 4201 through 4204.

Item 3. Tanks in Underground Areas Only

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5703.6.2.2 Below-grade or underground piping systems connected to a tank in an underground area. *Below-grade or underground piping systems that are connected to a tank in an underground area shall have secondary containment. The building, room or area in which the flammable or combustible liquid is stored or located may be used as secondary containment if it meets the containment and drainage methods as described in Section 5004.2.2.1.*

All portions of below-grade and underground piping systems shall be monitored for leaks by one of the following methods:

- 1. A listed or approved leak detection system that either activates an audible and visual alarm or stops the flow of product when a leak is detected.*
- 2. Direct visual inspection conducted monthly by designated personnel.*
- 3. Indirect visual inspection conducted monthly through the use of, but not limited to, mirrors, cameras or video equipment.*
- 4. If the above methods cannot be met, an alternative means shall be provided in accordance with Section 1.11.2.4.*

Exceptions: *The provisions of Section 5703.6.2.2 shall not apply to the following piping systems:*

- 1. Piping systems connected to a tank in an underground area that is used solely in connection with a fire pump or emergency system, legally required standby system, or optional standby system as specified in Health and Safety Code Section 25270.2(o)(1)(C)(iii).*
- 2. Piping systems connected to a tank in an underground area that contains petroleum to be used or previously used as a lubricant or coolant in a motor engine or transmission or oil-filled operational equipment or oil-filled manufacturing equipment, as described in Health and Safety Code Section 25270.2(o)(1)(C)(i).*
- 3. Piping systems connected to a petroleum hazardous waste tank in an underground area that complies with the hazardous waste tank standards pursuant to the California Code of Regulations, Title 22, Chapter 15, Article 10 (commencing with Section 66265.190), and the facility has been*

issued a unified program facility permit pursuant to Health and Safety Code Section 25404.2 for generation, treatment, accumulation, or storage of hazardous waste, as described in Health and Safety Code Section 25270.2(o)(1)(C)(ii).

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Notation

Authority: Health and Safety Code Sections 1250, 1569.72, 1569.78, 1568.02, 1502, 1597.44, 1597.45, 1597.46, 1597.54, 1597.65, 13108, 13108.5, 13114, 13143, 13143.2, 13143.6, 13146, 13210, 13211, 17921, 18949.2, 25500 through 25545, 25270.4.1(a)

Reference(s): Health and Safety Code Section 25270.2(o)

Item 4. Fire Command Center

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508.1.2 Separation. The fire command center shall be separated from the remainder of the building by not less than a 4 2-hour fire barrier constructed in accordance with Section 707 of the *California Building Code* or horizontal assembly constructed in accordance with Section 711 of the *California Building Code*, or both.

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911.1.2 Separation. The fire command center shall be separated from the remainder of the building by not less than a 4 2-hour fire barrier constructed in accordance with Section 707 or horizontal assembly constructed in accordance with Section 711, or both.

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Notation

Authority: Health and Safety Code Sections 1250, 1569.72, 1569.78, 1568.02, 1502, 1597.44, 1597.45, 1597.46, 1597.54, 1597.65, 13108, 13108.5, 13114, 13143, 13143.2, 13143.6, 13146, 13210, 13211, 17921, 18949.2, 25500 through 25545, Government Code Section 51189, Public Education Code 17074.50

Reference(s): Health and Safety Code Sections 13143, 13211, 18949.2, 25500 through 25545, Government Code Sections 51176, 51177, 51178 and 51179, Public Resources Code Sections 4201 through 4204.

Item 5. L- Occupancy Work Group

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903.2.16

903.2.16 Group L occupancies. *An automatic sprinkler system shall be installed throughout buildings housing Group L occupancies. Sprinkler systems ~~design for research laboratories and similar areas of a~~ Group L occupancy shall be designed for the square footage area of the L Occupancy based on an area of sprinkler operation of 2,500 square feet (232 m²) and design density of 0.20 gpm/sf. not be less than that required for Ordinary Hazard Group 2 with a design area of not less than 3,000 square feet (279 m²).*

In mixed occupancies, portions of floors or buildings not classified as with Group L occupancies, but not classified as Group L, shall be provided with sprinkler protection system per NFPA 13, designed of not less than that required for Ordinary Hazard Group 1 with a design area of not less than 3,000 square feet (279 m²).

903.2.16.1

903.2.16.1 Group L occupancies located ~~above the 10th story~~ on the 11th story and above. The automatic sprinkler system shall be designed and zoned to provide separate indication upon water-flow for each side of the 2-hour fire-smoke barrier ~~above the 10th story~~ on the 11th story and above.

903.2.5.4

903.2.5.4 Group H occupancies located ~~above the 10th story~~ on the 11th story and above. The fire sprinkler system shall be designed and zoned to provide separate indication upon water-flow for each side of the 2-hour fire-smoke barrier ~~above the 10th story~~ on the 11th story and above.

907.2.28

907.2.28 Group L. A manual fire alarm system shall be installed throughout buildings ~~containing~~ having Group L occupancies.

When Group L occupancies are located in mixed use buildings, at least one manual fire alarm box shall be located within the Group L occupancy.

907.2.28.1

907.2.28.1 Group L occupancies located ~~above the 10th story~~ on the 11th story and above. Manual fire alarm boxes shall be required on each side of the 2-hour fire-smoke barrier and at each exit ~~above the 10th story~~ on the 11th story and above.

907.6.4

907.6.4 Zones. Fire alarm systems shall be divided into zones where required by this section. For the purposes of annunciation and notification, zoning shall be in accordance with the following:

1. Where the fire-protective signaling, system serves more than one building, each building shall be considered as a separate zone.
2. Each floor of a building shall be considered as a separate zone.
3. Each section of floor of a building that is separated by fire walls or by horizontal exits shall be considered as a separate zone.
4. Each zone shall not exceed 22,500 square feet (2090 m²). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction.
Exception: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13.
5. For Group I-3 occupancies each cell complex shall be considered a separate zone.

6. For Group H and L occupancies ~~above the 10th story~~ on the 11th story and above, each side of the 2-hour fire-smoke barrier shall be considered a separate zone.

7. Annunciation shall be further divided into zones where deemed necessary by the enforcing agency.

TABLE 1004.1.2

TABLE 1004.1.2

MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

Laboratory	50 net
Educational (K-12)	100 net
Laboratories, non-educational	200 gross
Laboratory suite ^b	

...

1006.2.1

1006.2.1

SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

...	<u>L</u>	See Section 453.6.1	<u>NP</u>	<u>NP</u>	<u>NP</u>
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TABLE 1006.3.3(2)

TABLE 1006.3.3(2)

STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

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STORY	OCCUPANCY	MAXIMUM OCCUPANT LOAD PER STORY	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)
First story above or below grade plane	A, B ^b , E F ^b , M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2 ^{a, c}	10	75
	S ^{b, d}	29	75
Second story above grade plane	B, F, M, S ^d	29	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with

- Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
- b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall have a maximum exit access travel distance of 100 feet.
- c. This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1006.3.3(1).
- d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
- e. For L Occupancies see Section 453.6.1.

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